



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/632,750

08/01/2003

Yutaka Takata

16869K-086100US

4662

20350

7590

04/01/2009

TOWNSEND AND TOWNSEND AND CREW, LLP  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111-3834

EXAMINER

PUENTE, EMERSON C

ART UNIT

PAPER NUMBER

2113

MAIL DATE

DELIVERY MODE

04/01/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/632,750	<b>Applicant(s)</b> TAKATA ET AL.	
	<b>Examiner</b> EMERSON C. PUENTE	<b>Art Unit</b> 2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/21/08, 2/3/09</u>  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This action is made **Final**.

Claims 1-16 and 18-20 have been examined. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

### ***Claim Objections***

Claim 14 is objected to because of the following informalities:

Please change "the shared cache memory" (see line 9 of claim) to "a shared cache memory". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,920,580 of Cramer et al. referred hereinafter "Cramer" in view of US Patent Application No 2002/0188786 of Barrow et al. referred hereinafter "Barrow", US Patent Application No 2003/0145130 of Schultz et al. referred hereinafter "Schultz" and US Patent Application 2002/0162047 of Peters et al. referred hereinafter "Peters".

Art Unit: 2113

Regarding claim 1, Cramer discloses a disc controller comprising:

a plurality of disc drives each operable to transfer and store data (see figure 2 item 212)

a plurality of circuit boards(see figure 1 item 150 and column 4 lines 44-45), each of the circuit boards comprising:

a network controlling unit operable to receive a data input/output request sent from an external device through a network and perform a conversion between a file access form the external device and a block access. Cramer discloses a file server or filer including network adapters to retrieve request from a client and an operating system executing on a process to access stored information requested by the client on the hard disk (see figure 2 and column 4 line 61-67 and column 6 lines 1-6 and 17-20). Cramer further discloses the filer organizes the information of directories and files on disk, where the files may be implemented as data structures such as disk blocks, configured to store information (see figure 1 item 150 and column 1 lines 20-30).

a disc controlling unit coupled to the network controlling unit by an internal bus provided in the circuit board and operable to store data based on the file access transmitted from the network controlling unit (see figure 2 and column 6 lines 1-6).

a fault monitoring unit operable to retrieve status information for the network controlling unit and determine whether a fault exists for the network controlling unit, the fault monitoring unit being further operable to determine whether the fault is attributable to hardware and, if so, send a message to another circuit board of the plurality of circuit

Art Unit: 2113

boards to begin failover processing (see column 5 lines 50-67 and column 7 lines 20-35).

wherein the disc controlling unit receives a command sent from the network controlling unit through the internal bus and executes a data input/output for a disc drive in response to the command (see column 6 lines 18-20).

wherein the network controlling unit sends the command, for which a plurality of addresses are set, to the disc controlling unit (see column 6 lines 30-35).

wherein the disc controlling unit receives the command and execute data input/output corresponding to each of the addresses set in the command for the disc drive (see column 6 lines 20-25).

wherein when a file is to be processed based on the data input/output request is to be divided and stored in a plurality of storage areas of a disc drive, the network controlling unit generates the command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set. Cramer discloses information is stored in hard disks (see column 6 lines 17-20) and RAID arrays (see column 6 lines 11-16), indicating dividing and storing I/O request in a plurality of storage areas of a disc drive. Cramer further discloses the storage adapter cooperating with the storage operating system executed on the processor to access the hard disks (see column 6 lines 17-20), implying a command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set.

Art Unit: 2113

the network controlling unit generates the command in which a combination of a number of blocks and one logical address for a designating respective storage area are set. Cramer further discloses the storage adapter cooperating with the storage operating system executed on the processor to access the hard disks (see column 6 lines 17-20), implying a command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set.

However, Cramer fails to explicitly disclose:

a shared cache memory for temporarily storing data transferred to plurality of disk drives and connected to the plurality of circuit boards, such that the disc controlling unit is operable to store data into the shared cache memory based on the file access transmitted from the network controlling unit,

the disc controlling unit formed in a same circuit board in which the network controlling unit is formed,

wherein when the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disc drive.

Barrow discloses a data storage network comprising a shared cache memory resource (see figure 2 item 16 and page 3 paragraph 24) for storing recently requested data (see page 4 paragraph 31-32)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cramer and Barrow to have a shared cache memory, thus indicating a shared cache memory for temporarily storing data transferred to plurality of disk drives and connected to the plurality of circuit boards,

Art Unit: 2113

such that the disc controlling unit is operable to store data into the shared cache memory based on the file access transmitted from the network controlling unit. A person of ordinary skill in the art at the time of the invention could have been motivated to combine the teachings because Cramer is concerned with retrieving files in a filer cluster or data storage network (see column 4 lines 44-45 and 61-67) and shared cache memory resources, as per teaching of Barrow, are well known in data storage networks (see figure 2 item 16 and page 3 paragraph 24) for enabling faster retrieval of data (see page 4 paragraph 31-32).

Schultz further discloses a network attach storage controller embodied as a printed circuit board (see page 3 paragraph 28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cramer, Barrow, and Schultz to have the disk controller embodied as a printed circuit board, thus indicating the disc controlling unit formed in a same circuit board in which the network controlling unit is formed. A person of ordinary skill in the art at the time of the invention could have been motivated to combine the teachings because Cramer is concerned with providing a filer or disk controller (see figure 2 and column 5 lines 16-17) and having disk controllers embodied on a printed circuit board, as per teachings of Schultz (see page 3 paragraph 28), constitute a suitable well known implementation of disk controllers.

Peters further discloses a file system generally attempts to store data of one file in contiguous blocks on the physical storage media (see page 9 paragraph 98).

Art Unit: 2113

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cramer, Barrow, Schultz, and Peters to store data of one file in contiguous blocks on the physical storage media, thus indicating wherein the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disk drive. A person of ordinary skill in the art at the time of the invention could have been motivated to combine the teachings because Cramer discloses a file system comprising of files implemented on disk block to store information (see column 1 lines 25-30) and Peters discloses a file system generally attempts to store data of one file in contiguous blocks on the physical storage media (see page 9 paragraph 98).

Regarding claim 2, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses a file system operates in the network controlling unit, the data input/output request designates data, which is input/output to/from the disc drive, based on a file name, and the network controlling unit generates an address corresponding to a storage location of data on the disc drive, which corresponds to the file name set for the data input/output request, and sets the address in the command (see column 6 lines 8-12).

Regarding claim 3, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein the address is a logical address for designating a storage location of data in a logical area organized in a disc space of the disc drive (see column 1 lines 23-26).



Art Unit: 2113

Regarding claim 4, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein the internal bus is a PCI bus (see column 6 lines 5-6).

Regarding claim 5, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein the network controlling unit includes a communicating section communicating with the external device in accordance with a network protocol (see column 6 lines 40-55).

Regarding claim 6, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses:

the network controlling unit and the disc controlling unit update, at a predetermined timing, operation state information indicating each of a plurality of operation states of the network controlling unit and the disc controlling unit (see column 5 lines 50-55).

an occurrence of faults in the network controlling unit and disc controlling unit is detected based on the operation state information (see column 5 lines 50-55).

Regarding claim 7, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein the network controlling unit acquires, from the operation state information, an operation state of the disc controlling unit which is a sending destination of the command when the network controlling unit sends the command to the disc controlling unit, and determines, depending on the acquired operation state, whether the command should be sent to the disc controlling unit (see column 5 lines 57-67).

Art Unit: 2113

Regarding claim 8, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein the network controlling unit investigates the operation state of the disc controlling unit which is a sending destination of the command based on the operation state information when the network controlling unit can not acquire a receipt notification concerning the command sent to the disc controlling unit, and determines, depending on a investigation result thereof, whether the command should be sent to the disc controlling unit again (see column 5 lines 57-67).

Regarding claim 9, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein the network controlling unit investigates the operation state of the disc controlling unit which is a sending destination of the command based on the operation state information when the network controlling unit can not acquire a receipt notification concerning the command sent to the disc controlling unit, and when the network controlling unit judges that the disc controlling unit is not normally operating, the network controlling unit sends the command to at least one of other disc controlling units (see column 5 lines 57-67).

Regarding claim 10, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses a user interface for notifying the occurrence of the faults when the occurrence of the faults is detected (see column 3 lines 39-42).

Regarding claim 11, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein when the

Art Unit: 2113

occurrence of the faults is detected, a signal for requesting a restart is sent to one of the network controlling unit and the disc controlling unit where the faults have occurred (column 8 lines 50-52).

Regarding claim 12, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein the disc controlling unit includes an interface for connecting a backup device thereto, the network controlling unit includes a section for receiving a backup request concerning the data stored in the disc drive from the external device, and for sending a backup command to the disc controlling unit, the disc controlling unit includes a section for sending a backup instruction concerning the data stored in the disc drive to the backup device upon receipt of the backup command (see column 5 lines 15-45).

Regarding claim 13, Cramer discloses a disc controller comprising:

- a plurality of circuit boards (see figure 1 item 150 and column 4 lines 44-45).
- a network controlling unit for one of the circuit boards to receive a data input/output request sent from an external device through a network and perform a conversion between file access from the external device and a block access. Cramer discloses a file server or filer including network adapters to retrieve request from a client and an operating system executing on a process to access stored information requested by the client on the hard disk (see figure 2 and column 4 line 61-67 and column 6 lines 1-6 and 17-20). Cramer further discloses the filer organizes the information of directories and files on disk, where the files may be implemented as data

Art Unit: 2113

structures such as disk blocks, configured to store information (see figure 1 item 150 and column 1 lines 20-30).

a disc controlling unit being coupled to the network controlling unit by an internal bus provided, the disc controlling unit receiving a command sent from the network controlling unit through the internal bus, and input/output data to/from a disc drive in response to the command, the disc controlling unit being further operable to store data based on the file access transmitted from the network controlling unit (see figure 2 and column 6 lines 1-6).

a fault monitoring unit operable to retrieve status information for the network controlling unit and determine whether a fault exists for the network controlling unit, the fault monitoring unit being further operable to determine whether the fault is attributable to hardware and, if so, send a message to another circuit board of the plurality of circuit boards to begin failover processing (see column 5 lines 50-67 and column 7 lines 20-35).

wherein an occurrence of the fault of one of the circuit boards is detected by one of the other circuit boards by exchanging a heartbeat message among the circuit boards (see column 8 lines 5-15).

wherein when a file is to be processed based on the data input/output request is to be divided and stored in a plurality of storage areas of a disc drive, the network controlling unit generates the command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set. Cramer discloses information is stored in hard disks (see column 6 lines 17-20) and

Art Unit: 2113

RAID arrays (see column 6 lines 11-16), indicating dividing and storing I/O request in a plurality of storage areas of a disc drive. Cramer further discloses the storage adapter cooperating with the storage operating system executed on the processor to access the hard disks (see column 6 lines 17-20), implying a command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set.

the network controlling unit generates the command in which a combination of a number of blocks and one logical address for a designating respective storage area are set. Cramer further discloses the storage adapter cooperating with the storage operating system executed on the processor to access the hard disks (see column 6 lines 17-20), implying a command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set.

However, Cramer fails to explicitly disclose:

a shared cache memory connected to the plurality of circuit boards for temporarily storing data for a plurality of disk drives such that the disc controlling unit is being operable to store data into the shared cache memory based on the file access transmitted from the network controlling unit,

the disc controlling unit formed in a same circuit board in which the network controlling unit is formed.

wherein when the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disk drive.

Art Unit: 2113

Barrow discloses a data storage network comprising a shared cache memory resource (see figure 2 item 16 and page 3 paragraph 24) for storing recently requested data (see page 4 paragraph 31-32)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cramer and Barrow to have a shared cache memory, thus indicating a shared cache memory connected to the plurality of circuit boards for temporarily storing data for a plurality of disk drives such that the disc controlling unit is being operable to store data into the shared cache memory based on the file access transmitted from the network controlling unit. A person of ordinary skill in the art at the time of the invention could have been motivated to combine the teachings because Cramer is concerned with retrieving files in a filer cluster or data storage network (see column 4 lines 44-45 and 61-67) and shared cache memory resources, as per teaching of Barrow, are well known in data storage networks (see figure 2 item 16 and page 3 paragraph 24) for enabling faster retrieval of data (see page 4 paragraph 31-32).

Schultz further discloses a network attach storage controller embodied as a printed circuit board (see page 3 paragraph 28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cramer, Barrow, and Schultz to have the disk controller embodied as a printed circuit board, thus indicating the disc controlling unit formed in a same circuit board in which the network controlling unit is formed. A person of ordinary skill in the art at the time of the invention could have been

Art Unit: 2113

motivated because Cramer is concerned with providing a filer or disk controller (see figure 2 and column 5 lines 16-17) and having disk controllers embodied on a printed circuit board, as per teachings of Schultz (see page 3 paragraph 28), constitute a suitable well known implementation of disk controllers.

Peters further discloses a file system generally attempts to store data of one file in contiguous blocks on the physical storage media (see page 9 paragraph 98).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cramer, Barrow, Schultz, and Peters to store data of one file in contiguous blocks on the physical storage media, thus indicating wherein the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disk drive. A person of ordinary skill in the art at the time of the invention could have been motivated to combine the teachings because Cramer discloses a file system comprising of files implemented on disk block to store information (see column 1 lines 25-30) and Peters discloses a file system generally attempts to store data of one file in contiguous blocks on the physical storage media (see page 9 paragraph 98).

Regarding claim 14, Cramer discloses a controlling method of a disc controller having a plurality of circuit boards (see figure 1 item 150 and column 4 lines 44-45), each including

a network controlling unit to receive a data input/output request sent from an external device through a network and perform a conversion between a file access from

Art Unit: 2113

an external device and a block access. Cramer discloses a file server or filer including network adapters to retrieve request from a client and an operating system executing on a process to access stored information requested by the client on the hard disk (see figure 2 and column 4 line 61-67 and column 6 lines 1-6 and 17-20). Cramer further discloses the filer organizes the information of directories and files on disk, where the files may be implemented as data structures such as disk blocks, configured to store information (see figure 1 item 150 and column 1 lines 20-30).

a disc controlling unit connected to the network controlling unit by an internal bus provided in the circuit board (see figure 2 and column 6 lines 1-6), receiving a command sent from the network controlling unit through the internal bus, and inputting/outputting data to/from a disc drive in response to the command, the disc controlling unit being further operable to store data based on the file access transmitted from the network controlling unit (see figure 2 and column 6 lines 1-6 and 18-20),

and a fault monitoring unit operable to retrieve status information for the network controlling unit and determine whether a fault exist for each network controlling unit (see column 5 lines 50-67 and column 7 lines 20-35).

the method comprising:

by means of the network controlling unit sending one command, for which a plurality of addresses are set, to the disc controlling unit (see column 6 lines 30-35).

by means of the disc controlling unit receiving the command and executing data input/output corresponding to each of the addresses set in this command for the disc drive (see column 6 lines 20-25).



Art Unit: 2113

by means of the fault monitoring unit, determining whether the fault is attributable to hardware and if so, sending a message to another circuit board of the plurality of circuit boards to begin fail-over processing (see column 5 lines 50-67 and column 7 lines 20-35).

wherein when a file is to be processed based on the data input/output request is to be divided and stored in a plurality of storage areas of a disc drive, the network controlling unit generates the command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set. Cramer discloses information is stored in hard disks (see column 6 lines 17-20) and RAID arrays (see column 6 lines 11-16), indicating dividing and storing I/O request in a plurality of storage areas of a disc drive. Cramer further discloses the storage adapter cooperating with the storage operating system executed on the processor to access the hard disks (see column 6 lines 17-20), implying a command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set.

the network controlling unit generates the command in which a combination of a number of blocks and one logical address for a designating respective storage area are set. Cramer discloses the storage adapter cooperating with the storage operating system executed on the processor to access the hard disks (see column 6 lines 17-20), implying a command in which a combination of a number of blocks and a plurality of logical addresses for designating respective divided storage areas are set.

However, Cramer fails to explicitly disclose:

Art Unit: 2113

the shared cache memory,  
the disc controlling unit formed in a same circuit board in which the network controlling unit is formed,  
wherein when the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disk drive.

Barrow discloses a data storage network comprising a shared cache memory resource (see figure 2 item 16 and page 3 paragraph 24) for storing recently requested data (see page 4 paragraph 31-32)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cramer and Barrow to have a shared cache memory. A person of ordinary skill in the art at the time of the invention could have been motivated to combine the teachings because Cramer is concerned with retrieving files in a filer cluster or data storage network (see column 4 lines 44-45 and 61-67) and shared cache memory resources, as per teaching of Barrow, are well known in data storage networks (see figure 2 item 16 and page 3 paragraph 24) for enabling faster retrieval of data (see page 4 paragraph 31-32).

Schultz further discloses a network attach storage controller embodied as a printed circuit board (see page 3 paragraph 28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cramer, Barrow, and Schultz to have the disk controller embodied as a printed circuit board, thus indicating the disc controlling unit formed in a same circuit board in which the network controlling unit is

Art Unit: 2113

formed. A person of ordinary skill in the art at the time of the invention could have been motivated because Cramer is concerned with providing a filer or disk controller (see figure 2 and column 5 lines 16-17) and having disk controllers embodied on a printed circuit board, as per teachings of Schultz (see page 3 paragraph 28), constitute a suitable well known implementation of disk controllers.

Peters further discloses a file system generally attempts to store data of one file in contiguous blocks on the physical storage media (see page 9 paragraph 98).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Cramer, Barrow, Schultz, and Peters to store data of one file in contiguous blocks on the physical storage media, thus indicating wherein the file to be processed based on the data input/output request is to be stored in a continuous storage area of a disk drive. A person of ordinary skill in the art at the time of the invention could have been motivated to combine the teachings because Cramer discloses a file system comprising of files implemented on disk block to store information (see column 1 lines 25-30) and Peters discloses a file system generally attempts to store data of one file in contiguous blocks on the physical storage media (see page 9 paragraph 98).

Regarding claim 15, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses updating by the network controlling unit and the disc controlling unit, at a predetermined timing, operation state information indicating each of a plurality of operation states of the network controlling unit and the disc controlling unit, which is stored in the memory and detecting an

Art Unit: 2113

occurrence of faults in the network controlling unit and disc controlling unit based on the operation state information (see column 5 lines 50-55).

Regarding claim 16, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein the disc controlling unit includes an interface for connecting the external device thereto, the method further comprising receiving by the network controlling unit a backup request concerning data stored in the disc drive from the external device, and sending a backup command to the disc controlling unit and sending by the disc controlling unit the backup command concerning the data of the disc drive to the backup device upon receipt of the backup command (see column 5 lines 15-45).

Regarding claim 18, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses a user interface for notifying the occurrence of the faults when the occurrence of the faults is detected (see column 3 lines 39-42).

Regarding claim 19, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein when the occurrence of the faults is detected, a signal for requesting a restart is sent to one of the network controlling unit and the disc controlling unit where the faults have occurred (column 8 lines 50-52).

Regarding claim 20, Cramer in view of Barrow, Schultz, and Peters discloses the claim limitations as discussed above. Cramer further discloses wherein the disc controlling unit includes an interface for connecting a backup device thereto, the

Art Unit: 2113

network controlling unit includes a section for receiving a backup request concerning the data stored in the disc drive from the external device, and for sending a backup command to the disc controlling unit, the disc controlling unit includes a section for sending a backup instruction concerning the data stored in the disc drive to the backup device upon receipt of the backup command (see column 5 lines 15-45).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMERSON C. PUENTE whose telephone number is (571)272-3652. The examiner can normally be reached on 9-6 M-F.

Art Unit: 2113

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 571-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Emerson C Puente/  
Examiner, Art Unit 2113